

## CLAIMS

1           1. A computer-implemented method for generating a gain adjust signal to establish an  
2       audio output level, comprising:

3                   receiving at least one person-microphone position signal representative of a position  
4       of a person relative to a microphone;

5                   determining a gain adjust signal based at least in part on the person-microphone  
6       position signal; and

7                   using the gain adjust signal to establish the audio output level.

1           2. The method of Claim 1, wherein the person-microphone position signal is derived from  
2       a video system.

1           3. The method of Claim 2, wherein the gain adjust signal is determined based at least  
2       partially on at least one of: a distance from a person's mouth to a microphone, an orientation of a  
3       person's head relative to the microphone, and a head location relative to a direction of sensitivity of  
4       a microphone.

1           4. The method of Claim 2, further comprising:  
2                   recording at least one calibration person-microphone position signal;  
3                   recording at least one calibration audio level; and  
4                   using the calibration signal and calibration level, generating at least one mapping.

1           5.     The method of Claim 4, further comprising using the mapping to generate at least one  
2     gain adjust signal based on at least one person-microphone position signal.

1           6.     The method of Claim 1, wherein the person-microphone position signal is derived from  
2     a motion sensing system or a position sensing system or an orientation sensing system or a distance  
3     sensing system.

1           7.     The method of Claim 1, wherein the person-microphone position signal is derived from  
2     a laser system.

1           8.     The method of Claim 1, wherein the gain adjust signal is determined  
2     contemporaneously with a recording of the person.

1           9.     The method of Claim 1, wherein the person-microphone position signal is recorded.  
2     then the gain adjust signal is determined after a recording of the person.

1           10.    The method of Claim 1, wherein the gain adjust signal is a fast response gain adjust  
2     signal, and the method further comprises determining a slow response gain adjust signal based on an  
3     audio stream.

1           11. A digital processor programmed to undertake logic for dynamically establishing a gain  
2 of an audio system, the logic including:

3                 receiving a video stream representative of at least one person and at least one  
4 microphone;

5                 deriving person-microphone position signals using the video stream; and

6                 using at least some of the person-microphone position signals, generating audio gain  
7 adjust signals for input thereof to the audio system.

1           12. The digital processor of Claim 11, wherein the logic further includes determining an  
2 audio gain adjust signal based at least partially on: a distance from a person's mouth to a  
3 microphone, or an orientation of a person's head relative to the microphone.

1           13. The digital processor of Claim 12, wherein the logic further comprises:

2                 recording at least one calibration person-microphone position signal;

3                 recording at least one calibration audio level contemporaneously with the calibration  
4 person-microphone position signal; and

5                 using the calibration signal and calibration level, generating at least one mapping.

1           14. The digital processor of Claim 13, wherein the logic further comprises using the  
2 mapping to generate at least one gain adjust signal based on at least one person-microphone position  
3 signal.

1       15. The digital processor of Claim 11, wherein the gain adjust signal is determined  
2 contemporaneously with recording the person.

1       16. The digital processor of Claim 11, wherein the person is recorded, then the gain adjust  
2 signal is determined after the recording of the person.

1       17. A computer program product including:

2              computer readable code means for receiving light reflection signals representative of  
3              light reflected from a person and light reflected from a microphone;

4              computer readable code means for, based on the light reflection signals, determining  
5              an orientation signal; and

6              computer readable code means for generating an audio gain adjust signal based on the  
7              orientation signal.

1       18. The computer program product of Claim 17, further comprising:

2              computer readable code means for recording at least one calibration person-  
3              microphone position signal;

4              computer readable code means for recording at least calibration one audio level; and

5              computer readable code means for, using the calibration signal and calibration level.

6              generating at least one mapping.

1           19. The computer program product of Claim 18, further comprising computer readable  
2 code means for using the mapping to generate at least one gain adjust signal based on at least one  
3 person-microphone position signal.

1           20. An audio system, comprising:

2                 at least one microphone electrically connected to at least one audio amplifier having  
3                 at least one audio gain;  
4                 at least one video camera; and  
5                 at least one processor receiving signals from the video camera and establishing the  
6                 audio gain in response thereto.

1           21. The system of Claim 20, wherein the processor determines a gain adjust signal based  
2                 at least partially on: a distance from a person's mouth to a microphone as determined from the video  
3                 camera signals, or an orientation of a person's head relative to the microphone as determined from  
4                 the video camera signals.

1           22. The system of Claim 20, wherein the processor records at least one calibration person-  
2                 microphone position signal and at least calibration one audio level, and uses the calibration signal  
3                 and calibration level to generate at least one mapping useful in generating the gain adjust signal.

1           23. The system of Claim 20, further comprising a slow adjust filter using an audio stream  
2                 to generate a slow gain adjust signal.

1           24. An audio system, comprising:  
2                 at least one microphone electrically connected to at least one audio amplifier having  
3                 at least one audio gain;  
4                 at least one source of person-microphone position signals; and  
5                 at least one processor receiving signals from the source and establishing the audio gain  
6                 in response thereto.

1           25. The system of Claim 24, wherein the source is a video camera.

1           26. The system of Claim 24, wherein the source is a motion sensing system of a laser  
2                 system or a position sensing system or an orientation sensing system or a distance sensing system.

1           27. The system of Claim 24, further comprising a slow adjust filter using an audio stream  
2                 to generate a slow gain adjust signal.

1           28. The method of Claim 1, wherein the gain adjust signal is determined by selecting one  
2                 of several microphone outputs based on head position.

1           29. The system of Claim 24, wherein the source is an illumination-based pupil detector  
2                 or a face detector.